IN THE CLAIMS:

1.   (Original)   A method of separating CO_2 from a hydrocarbon inlet gas stream that is within predetermined pressure and temperature ranges, comprising the steps of:

(a) subjecting the inlet gas stream to fractional distillation in a distillation column providing a bottom product stream and a distillation overhead stream;

(b) passing the distillation overhead stream from step (a) to a membrane unit producing a hydrocarbon stream and a by-product stream;

(c) passing the hydrocarbon stream from step (b) to a hydrocarbon separator to separate hydrocarbon liquid having been condensed in said membrane unit from hydrocarbon vapor; and

(d) subjecting the hydrocarbon vapor from step (c) to cooling providing a cooled hydrocarbon vapor stream that is fed to a reflux drum; and

(e)   taking a reflux liquid stream from said reflux drum and a hydrocarbon gas product stream.

2.   (Original) A method of separating CO_2 from a hydrocarbon inlet gas stream according to claim 1 including:

passing said bottom product stream from step (a) to a reboiler/separator that provides a reboiler separator vapor stream directed to a bottom portion of said distillation column and a hydrocarbon condensate product stream.

3.   (Original) A method of separating CO_2 from a hydrocarbon gas inlet stream according to claim 2 wherein said bottom product stream from step (a) is pumped at increased pressure to said reboiler/separator.

4.   (Currently Amended) A method of separating ~~Co2~~ $\underline{CO_2}$ from a hydrocarbon gas inlet stream according to Claim 1 wherein a reflux liquid stream from step (e) is pumped at increased pressure to a top tray of said distillation column.

5.   (Currently Amended) A method of separating ~~Co2~~ $\underline{CO_2}$ from a hydrocarbon gas inlet stream according to Claim 2 wherein said bottom product stream from step (a) is heated prior to being passed to said reboiler/separator.

6.   (Currently Amended) A method of separating ~~Co2~~ $\underline{CO_2}$ from a hydrocarbon gas inlet stream according to Claim 1 wherein said hydrocarbon liquid stream from said reflux drum is passed through a cross heat exchanger to heat said inlet gas stream prior to its fractional distillation.

7.   (Currently Amended) A method of separating CO_2 from a hydrocarbon gas inlet stream that is within predetermined pressure and temperature ranges comprising the steps of:

(a) subjecting the hydrocarbon gas inlet stream to fractional distillation in a distillation column providing a bottom product stream and a distillation overhead stream;

(b) subjecting said distillation overhead stream of step (a) to membrane separation, providing a hydrocarbon stream and a CO_2 by-product stream;

(c) cooling the hydrocarbon stream of step (b) producing a cold hydrocarbon stream; ~~and~~

(d) refluxing said cold hydrocarbon stream from step (c) back into said distillation column~~.~~; and

(e) pumping said bottom product stream from step (a) at increase pressure to a reboiler/separator that provides a reboiler separator vapor stream that is directed to a bottom portion of said distillation column and a hydrocarbon condensate liquid product stream.

8.   (Cancelled) A method of separating CO_2 from a hydrocarbon inlet gas stream according to Claim 7 including:

passing said bottom product stream from step (a) to a reboiler/separator that provides a reboiler separator vapor stream that is directed to a bottom portion of said distillation column and a hydrocarbon condensate liquid product stream.

9.   (Cancelled) A method of separating CO_2 from a hydrocarbon gas inlet stream according to Claim 8 wherein said bottom product stream from step (a) is pumped at increased pressure to said reboiler/separator.

10.   (Original) A method of separating CO_2 from a hydrocarbon gas inlet stream according to Claim 7 wherein said cold hydrocarbon stream from step (d) is pumped at increased pressure to a top tray of said distillation column.

11.   (Currently Amended) A method of separating CO_2 from a hydrocarbon gas inlet stream

according to Claim ~~8~~ 7 wherein said bottom product stream from step (a) is heated and

then passed to said reboiler/separator.